

REMARKS

Applicants acknowledge with appreciation the Examiner's careful review and consideration of this application.

Applicants submit amended claims 1-4 based on one of the embodiments that may be characterized by (1) the expansion ratio, (2) the cell wall density ratio, and (3) the average cell diameter. The amendment avoids new matter and does not present a new issue. Please enter the Amendment for purposes of Appeal.

The Examiner rejected claims 1-6 and 9 under 35 U.S.C. 103(a) as being unpatentable over Morita et al.

The thermoplastic resin sheets of claims 1-4 are characterized by an average cell diameter in the range of 1 μm to 100 μm as well as by their specific expansion ratios and their specific cell wall density ratios.

The definition of the average cell diameter used in the present invention is found in the description from page 7, line 16, to page 8, line 4 and former claim 5.

As can be understood from the definition, the average cell diameter used herein almost means the average of the lengths of the major axes of the cells. Accordingly, in claims 1-4, the average of the lengths of the major axes of the cells ranges from 1 μm to 100 μm .

On the other hand, the document Morita et al. disclose a fabricable non-crosslinked polypropylene resin foamed sheet having a density of 0.09 to 0.4 g/cm^3 , a thickness of 0.5 to 8 mm and a closed cell rate of 70% or above, wherein the cell shape satisfies the following formulas (1) to (3):

$$0.35 < A/B < 0.65 \quad (1)$$

$$0.35 < A/C < 0.65 \quad (2)$$

$$0.10 < A \leq 0.4 \quad (3)$$

wherein A, B and C are the mean cell diameters in millimeter in the directions of thickness, extrusion and width of the sheet. As can be understood clearly from the formulas (1) through (3), A is the mean cell diameter in the thickness direction and is the smallest of A, B and C. In other words, the A indicates the average of the lengths of the minor axes of the cells. In formula (3), the A satisfies $0.10 \text{ mm} < A \leq 0.4 \text{ mm}$ and, in other words, is greater than $100 \text{ }\mu\text{m}$.

Comparing claims 1-4 of the present application to Morita et al., the cells in the foamed sheets of claims 1-4 are apparently smaller than those in the foamed sheet of Morita et al. because the averages of the lengths of the major axes of the cells in the foamed sheets of claims 1-4 are smaller than the average of the lengths of the minor axes of the cells in the foamed sheet of Morita et al. Morita et al. therefore neither disclose nor would it have suggested the average cell diameter of the cells in the expanded layer of the present claimed invention.

An unexpected result regarding thermal conductivity caused by the adoption of the average cell diameter specified in claims 1-4 is established in Tables 1 and 2.

The Examiner rejected claims 7, 8 and 10-12 under 35 U.S.C. 103(a) as being unpatentable over Morita in view of Usui et al.

As stated by the Examiner, Usui et al. teaches a polyolefin-based resin unexpanded layer foamed of polyolefin-based resin having long chain branch, having a branching degree index [A], wherein $0.20 \leq [A] \leq 0.98$ is satisfied, and having an expansion ratio in a range of 1.0 to 1.5 and 1.0 to 1.1

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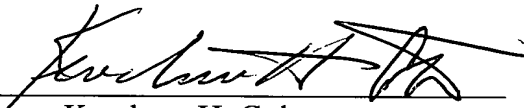
However, Usui et al. does not suggest the features of claim 1, which are discussed above as to the Morita et al. reference. Applicants therefore respectfully request the Examiner to reconsider and withdraw the rejection.

Applicants earnestly, but respectfully, submit they have responded in full to the Office Action. If any aspect of this Amendment is found unwanting, please telephone the undersigned.

Applicants meanwhile respectfully solicit a Notice of Allowance.

Respectfully submitted,

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